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**Bonnet et al.**

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(54) **DATA DETECTION IN A SEQUENCE OF  
TOKENS USING DECISION TREE  
REDUCTIONS**

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patent is extended or adjusted under 35  
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**G06F 17/27** (2006.01)

(52) **U.S. Cl.** ..... **704/9**; 717/142; 717/143; 717/144;  
704/10; 707/755

(58) **Field of Classification Search** ..... 704/9–10  
See application file for complete search history.

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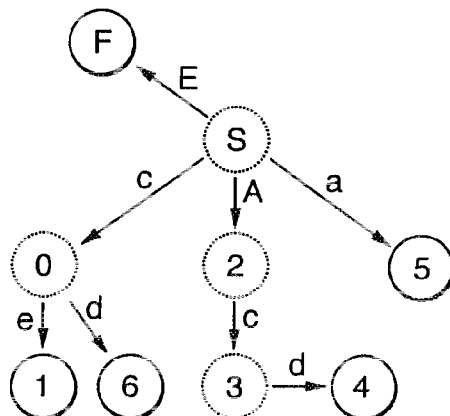
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(57) **ABSTRACT**

An apparatus for processing a sequence of tokens to detect  
predetermined data, wherein each said token has a token type,  
and the predetermined data has a structure that comprises a  
predetermined sequence of token types, including at least one  
optional token type. The apparatus comprises a processor  
arranged to: provide a tree for detecting the predetermined  
data, the tree comprising a plurality of states, each said state  
being linked with at least one other state by a respective  
condition, the arrangement of linked states forming a plural-  
ity of paths; and compare the token types of the sequence of  
tokens to respective conditions in the tree to match the  
sequence of tokens to one or more paths in the tree, wherein  
the predetermined data can be detected without using an  
epsilon reduction to take account of said at least one optional  
token type.

**20 Claims, 8 Drawing Sheets**



|   |                  |
|---|------------------|
| 1 | Reduction 2 -> E |
| 4 | Reduction 3 -> E |
| 5 | Reduction 1 -> A |
| 6 | Reduction 2 -> E |